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# THE ELEMENTARY SCHOOL TEACHER

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## CORN[1]

CHARLES A. McMURRY
De Kalb State Normal School

### INTRODUCTION (FOR TEACHERS)

The following treatment of the subject of corn is intended as a geography topic for fifth or sixth grade.

Preceding this in the earlier grades a number of lessons have probably been given on the corn topic, both in geography and science, while history and literature have dealt with it also in important ways. These preliminary lessons may be presupposed somewhat as follows.

In primary classes the children have planted corn in window boxes and have watched its growth. Sprouting it between wet blotting papers may have been tried also. In the spring and summer gardens on the campus, the children have planted, cultivated, and harvested the corn. In the fall they may have studied the ripening corn in tassel. This is an excellent lesson on the corn plant as a type of grasses and grains, with which it is compared by bringing specimens of wheat, oats, rye, and the grasses together.

In the third or fourth grade the corn has been studied locally as a geography topic in the prairie region surrounding us in Illinois. Its method of cultivation, its uses on the farm, and its shipment to the Chicago market are worked out.

The pioneer history stories of the prairie states make frequent statements regarding the uses of corn among the Indians and early

[1] This is the first of three papers which constitute the report of the Committee of Seven of the Superintendents and Principals' Association of Northern Illinois.

settlers. In literature and reading, the "Hiawatha" has probably brought to children the beautiful story of Mondamin as told by Longfellow. The children have also seen something of the corn shows and corn testing which are now somewhat common in our schools.

In the present treatment of this topic the children are supposed to have reached the point where they can take up this study from a geographical point of view, and work out the problem of corn production on a large scale in the corn belt, and expand this into a comprehensive survey of its importance for the United States and America.

A brief extension of the idea to other corn- and grain-producing countries may close the treatment with a world survey, though the completion of this phase of the topic may be left to later grades.

The historical thread upon which the treatment is developed is designed to give a concrete and progressive expansion of the thought in close relation to historic facts. This rapid development of the thought may take strong hold upon the minds of children. It interprets the world in a constantly enlarging horizon of thought, bringing in something new and instructive at every step.

OUTLINE ON CORN

1. Corn in the native wild state.
2. Cultivation of corn in Indian villages.
3. The pioneer settlers and their use of corn.
4. The prairie and other farmers of the corn belt.
5. The inventions and machines connected with corn production. Manufacturing plants for agricultural machinery.
6. The cultivation of corn at the agricultural department of the State University. Experiments by scientific experts.
7. Extension of corn cultivation north and south of the corn belt.
8. Other corn-producing countries in America, Europe, Asia, Africa, etc.
9. Corn turned to bad uses—whiskey.
10. Corn compared with other important cereals—wheat and rice.

SUGGESTIONS AS TO METHOD

1. Although geographical in its main purpose this topic is, to a large extent, historical and may be illustrated with pictures from the various periods of history included.

2. Make a collection of the regular products and by-products of corn, as flour, bran, starch, glucose, sugar, oil, breakfast foods, etc. Such bottled collections can be had from some of the manufacturing companies, as The Corn Products Company of Chicago, The American Starch Company, Oswego, N.Y.
3. The later geographies contain maps showing the corn belt in the United States and its extension north and south. Let children also make maps illustrating the corn and grain belts.
4. At the Field Columbian Museum of Chicago is found a large collection of corn and its by-products, well worth visiting with a class.
5. The practical bulletins in regard to corn cultivation and soil treatment, silos, etc., can be had from the State Agricultural Experiment stations, especially for Illinois, Iowa, and other states of the corn belt, and from the government at Washington.
6. A comparison of the corn belt with that for wheat and small grains, and for cotton and other staple products is of much value. Maps showing these areas are in the geographies or can be worked out on outline maps.
7. This topic is one of great interest at the present time in connection with agriculture in the schools and Farmers' Institutes.
8. The supplementary references in geographical readers and in history and literature, as in "Hiawatha," the "Corn Song," etc., are well worth attention.
9. Excursions to corn and grain fields and to experiment stations, and experiments with planting, cultivating, selection, and testing of corn may be carried out to much advantage.
10. A closer inspection of farm machinery at the implement stores and even experience in handling these machines is desirable.
11. Closely related science topics bearing on soils and fertilizers, and experiments on the growth of plants with whatever constructive problems belong to them should be associated with these corn studies.

## CORN

1. Corn in its various uses has become one of the great staple products which figure in the large concerns of the world market.

The corn belt in the United States is peculiarly interested in the successful cultivation of corn. In a larger sense corn is produced in nearly all parts of the United States, and is hardly surpassed in importance by any single product.

Originally the corn plant was a wild specimen of the grasses growing in the warm subtropical parts of America, as Mexico. We may suppose that even then it was of some value to the birds and animals feeding on grain, as is the wild rice, the weed seeds, and the nuts and fruits growing wild upon the trees and bushes. The Indians probably found it good relishable food where they could pluck it in the milk or later in the ripened grain.

In the wild state the ears were smaller, as the ground was not cultivated and there was no selection of seed. As in the case of other grains and fruits, it has taken centuries and perhaps thousands of years to develop corn from its primitive wild state, where the stalks were short and the ears small, to the large fruitful stalks and ears of our best varieties of corn, today.

2. The white men, when they first came to the regions of the eastern and southern states, found the Indian women cultivating corn in small fields about their villages. By this time the corn plant had spread northward from the semitropical countries and under cultivation had become a strong, hardy plant producing good large ears. In New England and in Virginia, the early settlers found it a strong necessity to procure corn from the Indians, who stored it away in baskets for the winter supply of food. The first explorers of the Illinois River valley, under LaSalle, found stores of corn in the Indian villages.

Along the valleys of central New York, among the Iroquois, were many villages and quite extensive fields of Indian corn, which gave a settled aspect to the country and brought about the beginnings of social and political life and a stronger organization of society.

The Indians had interesting legends of the corn plant, like that which Longfellow has told in Hiawatha, which expressed their notion of the importance of corn to them as a people. They had not only learned how to plant and cultivate corn, but also interesting modes of cooking and using it in palatable dishes, which were learned by the early settlers and have remained common to this day, as cornmeal mush, hominy, hoe cakes or pone cakes.

In central New York, in the Maumee Valley of Ohio, and in other Indian settlements, the power of the hostile Indians was finally broken by destroying their villages and laying waste their corn fields.

3. The pioneer settlers in Virginia and New England suffered much from hunger and starvation till they had learned from the natives how to plant and raise a corn crop. In Virginia the starving time well-nigh destroyed the colony before they divided up the land into small farms and allowed each man or family to clear the ground for the planting of corn, beans, and pumpkins. But from that time on there was abundance of food.

In pushing westward upon hunting and exploring trips the pioneers carried with them for food a store of parched corn and sometimes they sent forward in the early spring a few men to plant fields of corn for use by the later settlers when they arrived during the summer and fall. This was the case with Robertson, who settled at Nashville.

John Fiske says that on account of corn being more easily raised, harvested, and changed into food than wheat and other grains, it had a great influence upon the rapid settlement and the westward movement of population during pioneer times.

Not only in the hard labors of the pioneers did corn figure, but in their social festivities. The corn-husking frolics were among the chief of social events and the song of the huskers celebrates their festive sports. On Thanks-

giving day even till now we gather in the yellow or speckled corn and the tall yellow fodder to decorate our houses and schoolrooms. Popcorn has likewise long held a favorite place at family gatherings and in the fun and frolic of the children.

Throughout the eastern states and far into the Ohio Valley it was necessary to cut down the forests and clear away the brush and logs before a corn crop could be raised. This rendered the early life of the pioneers hard and laborious. Even upon the prairies the tough sod, which had never been disturbed, had to be broken by the heavy breaking plow by one or more yokes of oxen and it required one season to rot the heavy matting of grass roots before the full crops could be secured. But the ground once broken or cleared was rich in vegetable mold and produced surprising crops of corn, melons, vegetables, and other grains, fruits, etc.

4. But the uses of corn in early pioneer days were only the beginning (and a very small beginning) of that vast and profitable farm business of corn-raising which is now carried on in what is known as the *corn belt* of the United States. The few hundreds and thousands of bushels raised in pioneer days have grown into the millions, hundreds of millions, and even billions of our present enormous production. Instead of a few little patches in the river bottoms and around the Indian villages, instead of a number of scattered clearings for corn in the boundless forests of the Ohio Valley, we now find corn fields stretching away field after field over millions of acres.

As the early immigrants moved acrosss the Alleghenies into the Ohio Valley and opened up new farms they soon found that they were raising more corn, grain, and stock than they could use. These new-found lands were so rich that they gave an abundant surplus. The great question in those early days of the nineteenth century was how to find a market in which to dispose of their surplus products. They began to raise pigs, cattle, sheep, and horses, but soon they had too many of these also. Some of these products of the corn belt, they loaded upon flat boats and sent down the river to New Orleans. Recall the story of Lincoln going down the Mississippi River on a flatboat. As soon as the Erie Canal was built, they began to ship their surplus corn, meat, etc., by way of the lakes, Erie Canal, and Hudson to New York. The old National road across the Alleghenies helped them, but much more the Pennsylvania, New York Central, Baltimore & Ohio, and other railroads, which were built to carry the products of the corn country to New York, Philadelphia, and Baltimore. So great were the products of the corn country that they overflowed, beyond New York and Philadelphia, were loaded upon ships for Liverpool, Hamburg, Havre, and other parts of the world.

At the present time the products of the corn belt pour in vast streams eastward over the railroads and by way of the lakes to eastern markets and to Europe.

Corn is the chief product of the corn belt but closely dependent upon it are several other large farm industries, as pork and cattle raising, the dairy

and creamery business, the canning of corn, whiskey production in the distilleries, and the great milling industries dependent largely upon corn. In the feeding of stock, as hogs, cattle, and horses, the corn is changed into other farm products of increased value, and the manures so much needed for preserving the fertility of the soils are retained on the farm.

In the silos constructed for feeding dairy cows, not only the ears of corn but the stalks and leaves are converted into a nutritious food of the best kind for producing milk and butter. In recent years many various products of corn have been found serviceable as food for the people, new dishes have been discovered, and it is claimed that corn can be used far more extensively as a nourishing food for human beings. Good corn bread can hardly be surpassed by any kind of warm bread. Hominy and grits are very extensively used in some parts of the country. Corn meal mush and corn flakes are among the best of breakfast foods. Roasting ears in season and canned corn are important food articles in the groceries. From the sale of corn or of corn-fed meats, as of dairy products, the farmers of the corn belt have grown well-to-do, and independent. They have been able from sale of the products of the corn fields to supply themselves with other foods and clothing, fruits, and drinks, as tea, coffee, and chocolate, and the hundreds of manufactured articles of many sorts which are needed by farmers' families. Even the luxuries such as fine china and glassware, tropical fruits, imported silks and laces, pictures and libraries, pianos and automobiles are now very common articles in farmers' homes. Thousands of well-to-do American families of the corn belt are able to send their children to good schools, to put them later through college and university and to train them for any of the higher professions or for a life work in any of the technical and skilled industries. In fact it is from such farmers' families that many of the best educated and most useful men and women of our country are now coming.

5. The rapid development of corn production throughout the corn-growing states has brought about a great improvement in the machines for planting, cultivating, and harvesting of this crop. Among the notable machines invented for these purposes are the following: plows, corn-planters, cultivators, steel-toothed rakes, corn-huskers, corn-shellers, corn-cutters, silos and silage cutters, machines used in canning corn, various forms of corn elevators and roller-mills and other milling machinery.

For the construction of these various machines enormous manufacturing plants have been established at Chicago and in many other cities of the western and even of the eastern states. The general improvement in agricultural machinery and methods of cultivation has been one of the greatest proofs of progress in America and of the inventiveness of our people.

6. The importance of the corn fields to our people is shown in a striking way at the State Universities. In the agricultural department of the University of Illinois experiments have been conducted by scientific experts for

the purpose of increasing the productiveness of Illinois farms. In the cultivation of corn a careful series of experiments has been carried on which has opened the eyes of Illinois farmers. It has been shown that the farmer by careful selection of seed, by proper fertilizing and treating of the soil, and by the best modes of cultivation, can produce nearly three times as much corn per acre as at present. In short our farmers might be twice as rich as they are and could more than double the number of millions of bushels they have to sell or feed. This makes it worth while to study scientifically the best methods of treating the soil and of cultivating corn.

On the University Experiment Farm are many plots of ground where various kinds of field corn are raised and different modes of cultivation tried out, where different fertilizers are tested as to results upon the crops. The selection and development of the best breeds and strains of corn have been worked out with great care. In the Farmers' Institutes all over the state the people are made acquainted with the results of these experiments and the farmers' boys are called in and trained in corn testing. The majority of older farmers go on raising corn in the old way, but in many farm neighborhoods these better, more scientific, methods of corn raising and corn feeding are gradually introduced and worked out to success.

At the University experiment stations, college professors, who have thoroughly studied plant and animal life, who are well posted in physics, chemistry, and biology, who have made a study of soils and fertilizers, are constantly at work applying their knowledge of all these subjects to the raising of corn. For the most successful cultivation of corn depends upon many kinds of scientific knowledge. The corn plant itself in its various stages of growth must be understood. What kind of soil elements are needed and what are the chemical elements in such soils? Some soils are deficient and require the addition of certain definite fertilizers, as potassium or nitrates in order to raise good corn. The soil itself requires, according to its quality different kinds of treatment, with plow and harrow, or tile drainage, or rotation of crops from year to year. Certain insects, as chinch bugs and grubs are destructive to corn crops and it is a scientific problem how to get rid of them.

All these and many other questions have to be experimentally worked out at the University. The proper raising of a corn crop has become a very interesting problem for a large group of scientific experts at the University.

This is the case at many of our state universities because the corn belt includes several great states as Illinois, Indiana, Iowa, Kansas, Minnesota, etc.

7. But the corn-producing region stretches far to the south as well as north of the so-called corn belt. In the Gulf states corn has always been a valuable crop and should become more so. In Minnesota and the Northwest, corn is rapidly becoming an important crop, taking the place largely of the wheat fields. In fact certain varieties of corn have been developed which flourish in northern latitudes. They grow more quickly and ripen more rapidly in the

short, warm northern summers where frost comes early. Corn has been raised and ripened in northwestern Canada as far north as 56° N. latitude. Thus a plant that originated in subtropical lands has gradually modified its nature so as to adapt itself to more northern climates and is now actually cultivated in fields over the greater portion of North America.

Of course, a great variety of field and garden corn has been thus developed, as the white, yellow, and other kinds of field corn, sweet corn and popcorn among garden varieties.

8. Corn was originally a product of the new world of the west and its chief centers of production are in the United States. But it is now cultivated in the temperate regions of South America where the climate and soil conditions are favorable.

In southern Europe corn is produced as an important crop in Hungary, Italy, in the valley of the Po, and other warmer parts of southern Europe. In England and Scotland, in North Germany, Scandinavia, and northern Russia corn is not produced as a crop. Corn requires a summer season of hot warm days and nights with a moderate degree of well distributed moisture. Northern Europe is too chilly for the corn. But wheat, oats, barley, and rye flourish in these cooler places.

In India also and southern Asia, the corn plant has found a home because of favorable soil and conditions of heat and moisture. Parts of southern Australia and Africa are also adapted to corn production.

9. The corn plant is well known to us as one of the few great cereals which are chief among the food plants for the support of the human race. Like all good things it can be turned to bad use. In the manufacture of whiskey in the corn states, millions of bushels of corn are used yearly. Other grains, like rye are also used for whiskey production, but corn is the grain that is chiefly employed. Our great cities like Chicago, Peoria, and St. Louis have distilleries where millions of dollars are invested in the production of whiskey. The large amount of whiskey made is shown by the millions of dollars of taxes collected by the United States government from the distilleries. It is one of the chief sources of revenue to the government, known as excise or internal revenue.

10. Corn is a somewhat new product that has come into use since the discovery of America, and more particularly in the last one hundred years.

The other grains like wheat and rice have been in common use from antiquity. Wheat and rye for bread-making have been in use for thousands of years in Europe, in Egypt and in other eastern countries and later in America. Rice, which is the chief food of the Chinese, is probably as much used for the feeding of the human race as corn, and is now produced in considerable quantity in the southern Atlantic and Gulf States.

It has been claimed that the development of the world in civilization has depended upon the successful cultivation of the great cereals.

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# GROUPED OBJECTS AS A CONCRETE BASIS FOR THE NUMBER IDEA

FRANK N. FREEMAN

The purpose of this article is to give the results of an experimental investigation of number perception in children and adults, and to discuss the bearing of the results of the investigation upon the early development of the number idea in the child.[1] At the outset of the experiment the question to which an answer was sought was the following: What is the difference between the number of objects which may be grasped together in a single act of the attention by an adult and by children of various ages? The question may be illustrated from the field of vision. If there are a number of similar objects in a small group one finds it possible to distribute his attention at a given moment over a certain number of these objects, but if the number is increased he soon finds a limit beyond which it is impossible to grasp all the objects simultaneously. That is, if he attempts to include more in his attention he will find that the collection begins to break up into two or more groups each of which is small enough to be recognized. He then finds an oscillation of attention between groups. The number of objects which can be held simultaneously in a single act of attention by an adult is fairly uniform for different people and averages about five or six. The number of objects which can be grasped in this way is said to determine the scope of attention.

The question with which the experiment was begun, was then: How far do children differ from adults in this elementary capacity called the scope of attention? The assumption which underlay this investigation was that the answer to the question would have some bearing upon the relation between the number perception of

[1] For a detailed account of the experiment and its result see Frank N. Freeman, "Aufmerksamkeitsumfang und Zahlauffassung bei Kindern und Erwachsenen," in *Arbeiten aus dem Institut für Psychologie und experimentelle Pädagogik*, Band I; Alfred Hahn, Leipzig.

children and that of adults. The perception of a series of objects does not necessarily involve number perception, it is true. That is, a person may be able to compare two groups of objects and say that one group contains more objects than the other without definitely counting the number of objects in either group. Again we may test whether or not a person has correctly grasped a group of objects by requiring him to draw them. This might merely be an evidence that he has retained a visual image of the objects and of their arrangement. Although the ability to grasp a series of objects in the attention does not necessarily involve a developed number perception, it does undoubtedly underlie number consciousness. From any point of view, therefore, a study of the scope of attention will throw light on number ideas.

In order to determine the scope of attention in its simplest form it is necessary to present objects which do not have any definite form of grouping. The apprehension of a number of objects simultaneously under these circumstances requires that each object be regarded as a separate unit. If in even this first case one can arrange the objects in a group in his mind he can grasp very many more than the five or six which mark the limit of the scope of attention. In order to measure the scope of attention under relatively very simple conditions without grouping so far as the external objects were concerned, the objects were arranged in a horizontal line with an equal distance between them as in Series I, Fig. 1. Later, in order to test more complex perception, which has a more direct relation to the number idea, the objects were arranged in various kinds of groups. The chief forms of grouping which were used are shown in Fig. 1. The results of tests with these groups showed that greater difference in general exists between the children and adults in the perception of the grouped objects than in the perception of the ungrouped objects.

The method of presenting the objects was to expose upon a large screen and for very brief intervals of time the desired number of circles of light upon a dark background. The room was kept in dim light and the spots of light upon the screen were enough brighter than the background to be clearly seen. The projection apparatus was on the opposite side of the screen from the child and

was, therefore, out of sight. It consisted in a stereopticon lantern in which were inserted cards with holes of various numbers and arrangements punched in them. The exposure was made by allowing a pendulum upon which was fixed a large screen having in it an opening of variable size to swing through the beam of light. By adjusting the size of this opening the length of time of the expo-

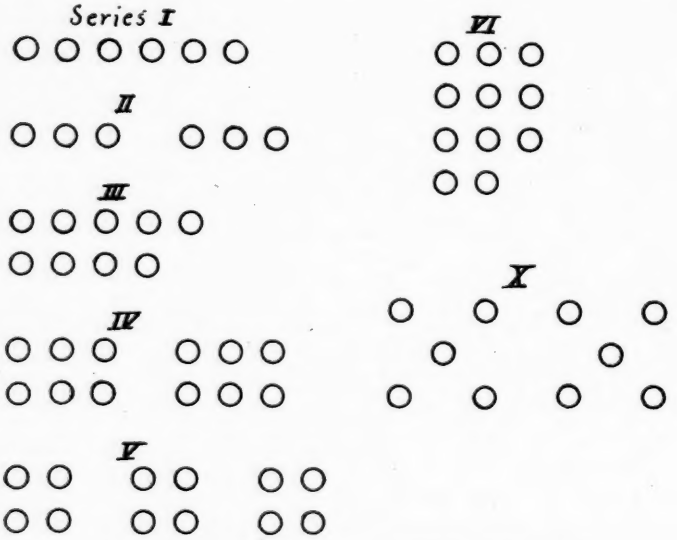



FIG. 1.—Illustrations of forms of grouping used in the experiment

sure could be regulated. The results of the experiment may be summarized as follows.

The persons who served as subjects of the experiment included both children and adults. The ages of the children ranged from six to fourteen years, but the children below the age of eight gave such incomplete and varying results that no positive conclusions could be drawn regarding their perception of number. This was probably due to their inability to grasp the stimulus in the brief time during which it was exposed. The differences which were found between the eight- to ten-year-old and the twelve- to fourteen-

year-old children can, however, be extended, without serious danger of error, to the younger children.

The first fact which was brought out was that less difference exists in the scope of attention between adults and children than might be expected. If we place the scope of attention of the adults and older children at about five, that of the younger children would be not less than four. That is, up to and including four objects, the younger children could judge the number as correctly as adults. Later results make it clear that there are differences of a marked character between adults and children; this difference in the number of objects which can be grasped simultaneously may account in some measure for the difference in the capacity of children and adults to deal with number, but it can account for only a small part of the difference between the mature and immature individual. Though there is some difference in this elementary capacity yet the greater part of the difference must be ascribed to the more complex process of organizing the impressions which are received and not to the simple process of grasping the impressions themselves. This was brought out clearly by the fact that as the numbers which were shown increased beyond the limits of the scope of attention, the correctness of judgment of the children fell off very much more rapidly than was the case with adults. This introduces us to the second main result of the experiment.

Though the difference in the scope of attention between adults and children was not great, there was a marked difference in the ability to perceive and correctly judge grouped objects which extended considerably beyond the scope of attention. A marked tendency on the part of adults to organize their perceptions into regular groupings was manifested even in the case of the objects which were in reality ungrouped. That is, an adult was very apt to divide a series of objects equidistant from one another and arranged in a horizontal line into several subgroups of from two to four each. By this process the whole number could be very much more easily managed. This, then, accounts for the fact above mentioned that adults could correctly judge numbers which extended beyond the number which they could grasp directly, even if the number extended much beyond the scope of attention.

When it came to the judgment of objects which were objectively grouped, the same result appeared. Adults and older children nearly always noticed the way in which the objects were arranged. A younger child, on the other hand, was very much slower in seeing that the objects were arranged in the form of a square or in groups of three, five, or six as the case might be, and in many cases the younger children failed entirely to grasp the arrangement. Furthermore, when they did arrange the objects into groups they often put them in a far-fetched and unnatural arrangement. For example, it occurred several times that a child would see two groups of five as in Series X, in the following way: One horizontal row of four, one horizontal row of two, and a second horizontal row of four. Or the groups of four objects, Series V, might be seen as groups of two in horizontal rows. Obviously, then, the younger children were very deficient in the way in which they organized the impressions into regular forms of grouping.

This organization of objects into regular forms is very closely related to number processes, and, as will be shown later, training in this form of perception is one of the best means of giving the child a grasp of the simpler number operations. The child's ordinary experience gives some basis for education in this organization of his impressions into regularly arranged groups. Most of the things with which he has to deal are so arranged. The plates on a table, for example, are symmetrically arranged. The panes in a window have a regular arrangement. The desks in school are arranged in rows with so many in each row. The trees on a street are planted in regular order. Thus his everyday experiences lead the child to the notion of grouping objects and of dealing with them as groups made up of certain numbers of individuals instead of leaving him with the tendency to look at individuals separately. This informal education, however, might very well be supplemented more extensively by formal training in the recognition of grouped objects.

Some of the applications of these general principles to the training of the child in number perception and in the use of number may be made.

The method of using groups of individual objects to illustrate

various numbers and their combinations was formerly employed by means of the old-fashioned abacus. This has largely gone out of use in the United States, but its place has been taken in Germany by somewhat more elaborate forms of apparatus. Introductory number work which consists in counting groups of objects has been largely replaced in the United States by the use of measurement as the first stage of arithmetic. This is perhaps due in large measure to the idea that only those units are suitable for illustrating number which are absolutely identical. It is obvious that units of measurement are more nearly identical than separate individual objects. The belief, however, that it is necessary to use identical units is entirely without foundation, and overlooks the fact that number is abstract and is not dependent upon the other characteristics of objects. We may choose to regard any object whatever as a unit and may count it with other units of different concrete nature. In fact it is advantageous at times to use different kinds of objects in order to bring out the fact that the number relations of objects are different from their other relationships. For example, it is perfectly possible to count together twelve chairs and six tables and say we have eighteen pieces of furniture.

The abacus, however, was not especially well suited to this purpose because of the fact that it did not permit of arranging the objects in various forms of grouping. The "reckoning machines" which are used in Germany are so constructed that the objects may be arranged in groups of two, three, four, five, etc. In addition they are so constructed that a group may be made up of two subdivided groups. The subdivision may be made by a line between two subgroups or by having a part of the large group in one color and part in another. Whatever the device used, the aim is conveniently to arrange objects in different groups and subgroups. It is not necessary, however, to have an apparatus for this purpose. The same aim can be attained by the use of the blackboard. The main point to be established is the value of the method.

Other forms of concrete experience are largely used in developing the number idea in the child. Each of these has certain characteristic advantages and disadvantages. The first method

by which the child is introduced to the idea of number is ordinarily that of counting. The child learns to count before he comes to school. Some of the forms of counting, however, obviously do not involve any idea of number. The child may say over the number names without applying them to any objects in particular, just as he would say over the A, B, C's. He may even say over the names of the numbers and at the same time point to objects, and still not have a clear idea of the fact that the final number which he reaches refers to the whole group of objects rather than to the last one in the series. That is, his idea may be of the ordinal type, first, second, third, etc., in which the number refers to a position in a series rather than to a whole group. Counting, therefore, serves as an introduction to number, but is not itself self-sufficient for the complete development of the idea. Some form of grouping must be added.

The process of measurement which has been extensively adopted instead of counting differs from counting or the perception of grouped objects in that the unit is not a concrete object but is a fraction of a whole quantity. For example, when we say that a pole is five feet long, or that a pail contains five quarts of water, the individual foot, or the individual quart, is not sharply set off from the other units of the whole quantity. The unit is itself represented, it is true, by a measure which in the illustrations would be a foot rule or a quart measure, but in the recognition of the concrete quantity which represents a multiple of the unit, the unit itself does not appear. Measurement, then, has its particular advantage and its particular disadvantage. The advantage is that the attention is naturally directed to the whole quantity which the number represents, as contrasted, for example, with the tendency in counting to see each element of the group separately. The disadvantage, however, is that the attention is not naturally directed to the units of which the quantity is composed. The illustration may be further developed in connection with the concrete representation of a simple number operation. If we divide an area or a quantity of any sort into two fractional parts, we may easily perceive that the whole quantity is equal to the sum of the two fractional quantities. Our attention is not, however, directed

to the actual number relations between the two fractional quantities and the whole, as it is when a group of objects is divided into two subgroups.

It is precisely at this point that the use of objects in various forms of grouping is suited to represent in a concrete way the number operations. If we have a group of five objects we may fix our attention upon this group as a whole, or we may divide the group into two parts and fix our attention upon a group of three objects by itself and upon a group of two objects by itself. This very clearly brings out the numerical fact that a group of five objects may be composed of a smaller group of three and a group of two. We here have combined the view of the whole quantity as represented by the total number and at the same time the thought of the individual units of which the whole group is composed.

In conclusion, we may further illustrate the way in which grouped objects may be used to form the concrete basis for the idea of the fundamental number operations. Suppose that we assume that the child is able to grasp at once four objects. He may then comprehend that a group of four objects may be made up of two groups of two objects each, and when he has grasped this fact he has comprehended the real nature of division. He may not even know the names of the numbers. Of course in order to use this idea in a practical way it is necessary that he have a command of the number names and of the figures which represent them. But the mere manipulation of the figures is not evidence that he grasps the idea, and if he has not grasped the idea the manipulation of the figures is meaningless to him. In the same way subtraction may be grasped by abstracting one object from a group of four and perceiving that the group of three and the group of one are together equivalent to the group of four. The correlative ideas of multiplication and addition are illustrated by reversing the process.

This process of dealing with groups may be extended by using multiples of the groups which are within the child's grasp. That is, if he grasps three separate objects as belonging together he may also grasp together three groups of three objects each. He thus

has at his command a much larger number of objects and he can learn to comprehend them in precisely the same manner that adults comprehend numbers which are beyond their grasp. The decimal system is really a means of extending our notion beyond the numbers which we can hold in attention. If the number name *one hundred* means anything to us beyond a name, it means an extension in a certain orderly way of numbers which are beyond our grasp, on the analogy of the extension which may be made within our concrete apprehension. The child may thus be introduced, not merely to the fundamental forms of number operation, but also to the ideas of the larger numbers.

# SUPPLEMENTARY REPORT ON THE STUDY OF RETARDATION IN THE SCHOOLS OF INDIANAPOLIS

R. W. HIMELICK
Supervising Principal, Indianapolis Schools

The purpose of this special investigation on retardation was to attempt to throw some light upon questions that arose through a study of the previous report by Superintendent Mirick.[1] There seemed to be a feeling among many teachers that the percentage of retardation was probably low enough; that the agitation had produced a tendency to force the percentage even too low, by causing teachers to feel that they must promote a certain number. At a glance it would seem that it is not difficult to account for the retardation of 4 or 5 per cent. "Lack of attendance," "mental," and "physical" condition of the children are the usual "remarks" as to why children are retarded. There were two fairly well-defined questions that were prominent in this investigation: (1) Have we reached the proper standard for promotion? Should a larger or smaller number be retarded? (2) Are the right ones being retarded?

It seemed that the simplest way to get at this matter would be to ask a number of teachers to put all pupils on trial. If this could be done in different schools the conditions, both as to the nature of the children and the attitude of the teacher herself, would vary enough to make the experiment decisive. This would mean that the success or failure of all promotions would be tested by the ability of the child to do the new work; at present promotion depends on what the pupil had done during the past term. Our promotions have always been made upon the assumption that all school work is perfectly graded and unless the child completes in a satisfactory manner one grade he must not attempt the next

[1] "Report on the Study of Retardation in the Schools of Indianapolis, 1908–11," *Elementary School Teacher*, XII, No. 2, October, 1911, by George A. Mirick, acting superintendent of schools.

higher. Promotions have always been based very largely upon the possession of a definite amount of knowledge rather than real experience. It is a common feeling that a child retrogrades during the summer vacation. In many cases this period of his life is filled with rich experiences. But when he comes into the schoolroom we do not know how to make the best use of these experiences but try to create for him, from books, a new experience.

The individual reports given below are just as they came from the supervisors. Each supervisor made his report in the form best suited to his case. This was done in order to get at the subject from as many viewpoints as possible.

GENERAL STATISTICAL SUMMARY OF THE FOLLOWING REPORTS

| | |
|---|---|
| 1. Total number of schools included in this report | 12 |
| 2. Total number children included in this report | 6,270 |
| 3. Number reported for retardation | 555 |
| 4. Percentage on trial | .088 |
| 5. Number making good | 285 |
| 6. Number retarded | 119 |
| 7. Percentage of retardation | .019 |
| 8. Number unaccounted for | 150 |
| 9. Percentage of retardation (January, 1911) entire city | .046 |
| 10. Percentage of decrease in retardation for these districts | .027 |

REPORT FROM THE LUCRETIA MOTT SCHOOL

In the Lucretia Mott School every one of the five hundred pupils was promoted in June, 1911. Those who under ordinary circumstances would have been demoted numbered 27. The certificates of these pupils had a note appended as follows: "John has been promoted to the next grade on a six weeks' trial. If in the fall, he does not make good, he will be retarded at the end of six weeks without further notice." The teachers readily accepted the supervising principal's request that this method be given a trial. We hoped that the physical and perhaps mental development of the child during the summer, as well as the definite consciousness that his standing was not acceptable, might be the means of saving a half-year for him. Teachers were frankly informed by the supervising principal that in the fall they were to make the final decision regarding the promotion or retardation of every child who was on the six weeks' probation list; and that the supervising principal did not wish to have a voice in the last disposal of the cases. I was absolutely unbiased about the final outcome and made an effort to impress this fact upon the teachers.

On November 1 I asked for the judgments of the teachers, with the following results:

| Grade | Number on Trial | Number Demoted November 1 | Number Not Demoted |
|---|---|---|---|
| 8A | 2 | 0 | 2 |
| 8B | 3 | 1 | 2 |
| 7A | 4 | 2 | 2 |
| 7B | 3 | 1 | 2 |
| 6A | 3 | 1 | 2 |
| 6B | 2 | 2 | 0 |
| 5A | 2 | 2 | 0 |
| 5B | 1 | 0 | 1 |
| 4A | 2 | 2 | 0 |
| 4B | 1 | 0 | 1 |
| 3A | 1 | 0 | 1 |
| 3B | 2 | 1 | 1 |
| 2A | 1 | 0 | 1 |
| 2B | 0 | .. | .. |
| 1A | 0 | .. | .. |
| 1B | 0 | .. | .. |
| Totals | 27 | 12 | 15 |

The table shows that $\frac{5}{9}$ of the proposed demotions of June, 1911, were, so far, saved a half-year. One of the pupils demoted November 1 has been so thoroughly brought to consciousness that he is now being replaced; thus making the result: 16 pupils out of 27 are able to do better than we expected at the close of school.

LYDIA R. BLAICH
*Supervising Principal*

REPORT OF MCKINLEY SCHOOL

This is a twelve-room building enrolling five hundred pupils, thirty-six of whom were reported for demotion in June. On the suggestion of the Assistant Superintendent all of these children were placed as trials on the rolls and given promotion cards on which were written statements to the effect that if after from four to six weeks' trial they were unable to do advanced work, they were to fall back into a lower grade.

December's record was as follows: Eleven left the district and we have no report from them, four were demoted, six were reported as doing well, and fifteen were in the advanced grade but were weak in their work. This last class would have been much smaller were it not that many of the children were kept from school four or more weeks on account of diphtheria and also that the classes were too large to enable the teachers to give the individual help necessary to the success of such a plan.

SUMMARY

| | |
|---|---|
| Reported for demotion | .072 |
| Finally demoted | .008 |
| Doing well | .012 |
| Promoted | .05 |
| A little weak | .03 |

IDA GEARY
*Supervising Principal*

REPORT OF SCHOOL NO. 4

Building of 700 pupils, 19 teachers, all grades below the high school. Children for the most part come from homes of working people. They do not have many advantages. School of central interest and importance in the lives of the children.

In the opening of 1911 we were asked to look closely after the matter of irregular promotions. Then came the request that at the June promotion we should send on not only the pupils who we felt had completed their work and were ready to go on, but the others also. In fact every child in the building should go on. This was to serve as an experiment by way of judging to what degree we were correct in our estimate of the ability of the pupils whom we had expected to leave behind. I did not favor the plan, but consented to be open-minded at least and give it a fair trial.

After I had reached this conclusion, I presented the matter to the teachers. No one favored the plan and some strongly opposed it. Knowing that the success of the experiment depended upon the sympathy and co-operation of the teachers I endeavored to convince them that if we undertook it at all we should stand together and give it a faithful trial. Six weeks before the end of the term a number of children whose work was poor were told that they were to have a trial, so instead of settling back and virtually dropping out of the race, they got to work and made considerable headway. Right here is one point in favor of this plan. At the close of the term each teacher marked "promoted" all whom she recommended. Those who she felt were able to make the grade if some pressure was brought to bear were marked "promoted on trial." The others, the hopeless cases, were left blank, and I marked them "special trial." Each "trial" and "special trial" was written up by the teacher, who stated freely whatever she knew that would give light in the case. At the beginning of the new term these trial pupils were looked after and encouraged in every way to keep up their efforts, with the result that a number have done stronger work than the regularly promoted pupils. The plan was to give the "trials" and "special trials" six weeks of the new term in which to prove their worth, but as there was such great absence as a result of the diphtheria epidemic a longer time was needed in some cases to decide. This unusual absence together with the fact that a large number of our children

withdrew to attend parochial schools has interfered with making a complete and satisfactory report of the experiment. The figures are as follows:

| | |
|---|---|
| Total number of children on trial | 124 |
| Total number who left the building | 29 |
| Total number making good | 66 |
| Total number sent to lower grades | 29 |

It is not the intention to ask any teacher to keep any trial pupil beyond the six-weeks period of trial unless his work was satisfactory to his teacher. In a few cases, however, because of crowded conditions some very weak children were obliged to remain in the room as placed at the first of the term. It may be well to mention right here that one drawback in connection with this experiment was this. Parents did not wish to purchase new books for a child who was not sure of making good, and when the books were furnished the parents seemed to feel that such books should be sufficient to make the child's going on unquestionable—that to put the child back after getting his books was a positive injustice. While the conditions in the building have been unfavorable for this experiment the result has thrown valuable light on the subject and proved, so it seems to me, that a larger number of children can be carried over with safety to the higher grades than seemed possible before. I do not believe every child should be promoted at the close of the term, but I am confident that we should be quite generous in this matter of trial promotions.

LULU COBLEIGH GROVE
*Supervising Principal*

REPORT OF GEORGE W. SLOAN SCHOOL

It was decided to try the plan of promoting all of the 968 pupils in the Sloan School at the close of the term in June. No announcement was made of this decision to the teachers, so when the promotion rolls were presented to the supervising principal for approval they showed, as had been the custom, three classes: those who were to be promoted unconditionally, those who were to be passed on trial, and those who should be retarded or kept in the same grade.

In the examination of the rolls, when the name of a pupil who was to be placed upon the retarded list was reached, the teacher was asked, What would be the effect if this pupil were given a trial? The general reply was that he could not do the work of the next grade. However he was passed on trial and given a mark by which he could be distinguished from the other trial pupils mentioned above. After all the rolls had been passed upon it was found that there were 82 such trial pupils.

At the next teachers' meeting they were told that if at the end of six weeks after the opening of school these same children were not doing satisfactory work, they would be demoted without question, having been given a fair trial.

The teachers were unanimous in opinion that the experiment was well worth the trial. Several however predicted that at the end of six weeks most of these children would be demoted.

In making the class lists in September they were distributed through the various rooms, but in case there were two rooms of the same grade they were placed in one room. Nothing was said to the teacher about the particular pupil and as there were several changes in the corps, not much information was received from former teachers. At the beginning of the fifth week of school the teachers were called together and blanks, such as is shown below, were distributed to each of them with instruction to fill out and send to the parent.

GEORGE W. SLOAN SCHOOL
October, 1911

Mr.....

Your son Arthur is not doing satisfactory work in arithmetic, spelling, etc. Unless there is a marked improvement in his work within the next two weeks he will be put into a lower grade without further notice.

.....
*Supervising Principal*

.....
*Parent's Signature*

An examination of the notices which were sent to parents showed that about 60 per cent of them were for children who had been recommended for retardation in June; the other 40 per cent were those who had been regular trial pupils or were new to the school.

At the opening of the school in September there was diphtheria in the district and at the end of six weeks it had become epidemic. At this time 40 per cent of all the children were out of school, and naturally a large number of these were those whose parents had received the notices of unsatisfactory work. It did not seem practical to carry on the plan at that time. The epidemic continued until the Thanksgiving vacation. Upon investigation after Thanksgiving it was found that to regrade according to teachers' opinions would again disrupt the school, so it was decided to allow the grading to remain as it was and to retard all these children who are reported as unsatisfactory at the end of the term.

Just before the Christmas vacation the teachers were asked for the names of those whose work was unsatisfactory. It was found that 33 of the names were the same as those who were recommended for retardation in June.

SUMMARY

| | |
|---|---|
| Number enrolled at the close of the term | 968 |
| Number recommended for retardation | 82 |
| Number recommended for retardation in December (of same list) | 33 |
| Number not in this school in December (of same list) | 9 |
| Number doing satisfactory work in December (of same list) | 40 |

The conditions have been so extraneous that it is difficult to form conclusions of the results. It however is true that about one-half of those who were recommended for retardation in June have made good in their classes. What the results would have been under favorable circumstances can only be surmised, and whether these same persons continue to be promoted regularly remains to be seen.

DANIEL T. WEIR
*Supervising Principal*

REPORT FROM SCHOOL NO. 61 AND CALVIN FLETCHER SCHOOL

The plan of promotion herein discussed was presented in detail to the teachers at each building at a meeting early in June. They at once assumed a scientific attitude with regard to it. They were sympathetic toward the children, and on the whole so far as they were a factor the conditions were as favorable as could be desired. They were ready to co-operate in any attempt to get more light on a problem perplexing to them as to the supervising authorities. They were quick to see that the incentive of a trial, new subject-matter, new teachers, the experience and development during the vacation season were factors worth taking advantage of, whose weight could only be determined at some reasonable time within the following term.

At the close of the term in June written statements definitely stating the conditions were sent to the parents in each case. The conditions were also made plain to the children. This was repeated at the opening of schools in September. Only those children about whose success there was serious doubt were taken into account—such children as ordinarily would not have been promoted. All others were promoted clear of conditions.

The Fletcher School is departmental in organization, consisting of 9 teachers, and at that time of approximately 250 pupils of the 7B to 8A grades inclusive. The teachers are of comparatively high grade. Out of this number of children a total of 16 were promoted on trial of six weeks—all others being promoted clear. The distribution by grades and results to date are as follows:

9B grade (first term of high school).....6
Of these the two strongest entered other activities; one withdrew with poor standing; one is probably failing and remains in school only under pressure of parents; and two are doing acceptable work.

8A grade.....5
One was returned to the 8B grade; one is doubtful, and three are doing fair work.

8B grade.....3
One has a rank of fair, and two have developed into comparatively strong pupils.

7A grade.....2
One entered the parochial schools, and one is doing satisfactory work. Out of the total sixteen, three did not re-enter, two have failed, two are doubtful cases, and nine are maintaining acceptable rank.

School No. 61 is a seven-room building with approximately 300 children of the 1B to 6A grades inclusive. The corps of teachers on the whole is a good one. A fact of interest to be noted here is that at the opening of the September term this school was placed under different supervision, and attention to the experiment practically lapsed throughout the term. No six-weeks trial term was thus applied here. This fact, however, does not in any wise impair the results but may be taken into account in their interpretation. Out of the total 300 children 18 were given the trial. The distribution and results are as follows:

7B grade.....3
One moved from the city; two were transferred to school No. 8, and are doing fair work.
6A grade.....2
One left the city and one is acceptable.
6B grade.....2
Both doing satisfactory work.
5B grade.....2
Both doubtful of promotion in January.
4A grade.....3
One transferred, one is failing, and one is doing well.
4B grade.....2
One is failing and one ranks fair.
3A grade.....2
One is failing and one is satisfactory.
2B grade.....2
One left the city, and the other is succeeding with considerable individual help.

Out of the total eighteen—four were transferred and were dropped out of account, five will probably not be promoted in January, and nine—one-half—are doing acceptable work.

It is not assumed that herein is found the solution of the intricate problem of promotion. In a sense it might appear that the day of reckoning is only deferred to the end of a definite trial period within the term rather than coming at the end of the previous term. There is perhaps never a time when one can be perfectly certain of the wisest course to pursue in many cases. The question of determining in each case between two alternatives the situation in which a particular child may best live and get experience, the conditions in which he may best grow and develop is a question to answer which even to a practical certainty involves a great many factors. This will be true at whatever time the issue is made. As a matter of fact in a good school more or less frequent promotions are made at any time throughout the term. And though it might appear that in this case the time of reckoning is only deferred, it must be granted that by so doing we come to the problem from the consideration of a number of factors, and, with the advantage of a number of facts which otherwise would have been impossible. And as a result it seems fair to assume that 19 children out of a total of 35 were saved the unnecessary repetition of

a grade with all the injustice that goes with it, while the 8 who are repeating or will probably repeat the grade next term are quite as well off, so far as can be determined, as they otherwise would have been.

E. R. RAY
*Supervising Principal*

REPORT FROM SCHOOL NO. 32

In June, 1911, all pupils in School No. 32 were promoted to the next higher grade than the one they were then in. At that time there were 536 pupils besides the 8A's. Twenty of the 536 pupils were considered by the teachers as not ready for promotion. Of the others, 15, including 6 1B's who had been in school less than two months, were weak in one or more subjects and some doubt was expressed as to the wisdom of promotion. In all of these cases the promotion card bore the teacher's statement of the particular weakness of the child and the fact that a trial of six weeks in the advanced grade would be granted the following term.

On the first 20 (the ones poor in all subjects) 4 moved from the city or from the district; 10 are doing the work of the higher grade as well as the average of the class; 5 are still poor in all their work and I fear always will be; 1 out of the twenty was demoted.

Of the other 15 (doubtful in one or more subjects) 6 were the 1B's who had been in school less than two months. They have moved along with their class. Two of the fifteen left school, one has been demoted, and the others are doing as satisfactory work as others in the class.

SUMMARY

536 pupils on the rolls.
20 poor in all subjects.
15 poor in one or more subjects.
The 35 given a trial in higher grade:
2 demotions.
6 left city or district.
5 still poor—but no worse.
22 doing as satisfactory work as others in the class.

LIZZIE J. STEARNS
*Supervising Principal*

REPORT FROM SCHOOL NO. 49

In June, 1911, there were 650 pupils, grades 1B to 8A inclusive, enrolled in school No. 49. Of these 97 were marked "on trial." Of this number 45 would not have been promoted under ordinary conditions, and it is upon these 45, consequently, that this experiment was made.

From the start the eighteen teachers in the building were taken into full confidence. Their interest was thus aroused, and was active and scientific throughout. It was realized that their intimate knowledge of the pupils

concerned was too valuable to be discarded, or to be used by them "in the dark." Before the promotions in June, the theory and the plan of the experiment were fully explained and discussed in teachers' meetings. Upon the opening of school in September, the conditions were explained to all new members of the corps, and each teacher in the building was asked to keep track of her trial pupils. Reasonable assistance was given, and conferences on individual pupils were often held. New subject-matter, it was thought, was only one of the elements in the possible success of a weak pupil. Intelligent consideration and help by his teacher were thought equally important and equally his due.

At the close of the first six weeks of the term, when the trial period should have expired, the school was in the midst of a diphtheria epidemic. For nearly a month the attendance was about 50 per cent of the enrolment. Naturally enough, most of the trial pupils were numbered among the absentees. This condition in part vitiated the experiment, although the period of trial was considerably extended. A week after the attendance had again become normal, all trial pupils who were evidently failing were carefully investigated and tested. Out of the 45 pupils it was found that 12 had failed "to make good," and that 10 others would possibly be failures at the close of the term. The 23 pupils remaining, however, were found to be doing satisfactory work, some of them, in fact, were stronger than certain pupils who had passed clear in June.

This brief experiment, imperfect and incomplete as it was, has brought up two or three pertinent suggestions.

*a*) Promotions should be more freely made. Deficient pupils should be given more than the "benefit of a doubt." It is impossible to foresee the effect of a new grade upon such pupils and properly to take into account the growth, mental and physical, which comes to a child from month to month.

*b*) The success of the 23 pupils who "made good" meant more to them than merely saving a half-year. Undoubtedly the educative process in their cases operated more nearly at the maximum efficiency. Furthermore, on the spiritual side, it would be hard to estimate the value of success, instead of failure, in their tender years.

*c*) In principle, it is as great an error to promote all pupils as to promote none. The practice of experienced supervisors in making the classification of deficient pupils a study, and each case an individual one, must be followed. The highest discernment and judgment, with all the light available, are none too accurate in placing a pupil where he may be most benefited and work at his maximum efficiency.

J. F. THORNTON
*Supervising Principal*

REPORT FROM SCHOOLS NOS. 16, 50, AND 52

I feel that the teachers went into this experiment with an open mind. There was no objection on the part of any teacher to the investigation. Many

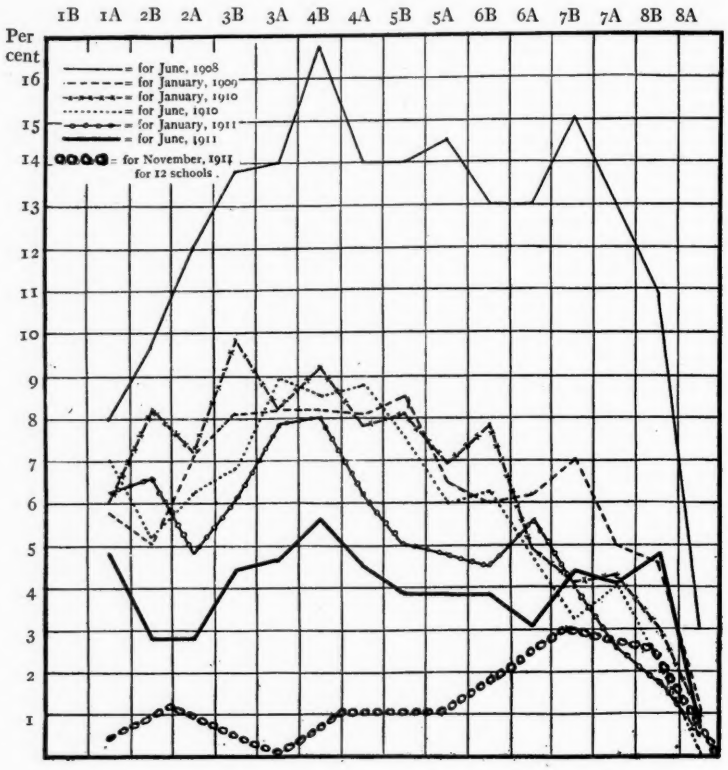
## DEMOTIONS AND SPECIAL PROMOTIONS

| School | Enrolment | | | Demotions | | | Percentage of Demotion | | | Special Promotion | | | Percentage of Promotions | | | Net Gain or Loss | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B | G | T | B | G | T | B | G | T | B | G | T | B | G | T | B | G | T |
| 16..... | 251 | 275 | 526 | 4 | 2 | 6 | .016 | .007 | .011 | 10 | 8 | 18 | .04 | .028 | .034 | .024 | .027 | .023 gain |
| 50..... | 273 | 278 | 551 | 7 | 1 | 8 | .025 | .003 | .014 | 6 | 4 | 10 | .022 | .011 | .018 | .003 loss | .015 gain | .004 gain |
| 52..... | 410 | 429 | 839 | 4 | 2 | 6 | .01 | .005 | .008 | 7 | 4 | 11 | .017 | .01 | .013 | .007 | .008 | .004 gain |
| | | | 1,916 | 15 | 5 | 20 | | | | | | | | | | | | |

Note:—The above table is presented in order to show the effect which the study of the retardation problem has had upon the bright pupil as well as the retarded one. We have been pulling from both ends. The bright children have been held down to wait upon the slow pupil and the slow ones have been pulled up. Each individual is a standard unto himself.

of the teachers expressed themselves as believing that such a course would help the individual teacher in making a more intelligent classification of her pupils.

TABLE OF RETARDATIONS IN WHITE SCHOOLS GRAPHICALLY REPRESENTED




In addition to this work, the teachers were asked to look after the pupils that might be advanced a grade. A study of the chart above will show the results of this experiment. Instead of repeaters there is a net gain in every case. This is not only a gain to the children but a saving to the city.

In a number of cases children recommended for demotion not only made good but did a higher grade of work than some who were passed regularly.

This does not mean that the judgment of the teacher in either case was not good. It does mean that some children grow during the vacation while others retrograde.

Such a plan of promotion seemed to be a relief to both teachers and pupils. Everybody seemed happy, consequently there was a good beginning. Fewer complaints have come from teachers with reference to the grading. The children felt that the responsibility rested with them. It was their business to make good.

A study of the table on retardations, which was given in the previous report, to which is added the retardations for November, 1911, reveals some interesting things. In the first place the crest which had been prominent in the 4B almost disappeared. The crest in the 7B remains. This is due to the fact that teachers feel that these children are near the end of the course and are not prepared to do the traditional high-school work. As a result of this these people are retained in grades 7A and 8B until they quit school. This conclusion has been reached after consulting with teachers who were responsible for retardation of pupils in these grades.

COMMENTS

It should be understood from the beginning that this report is not made to set forth the merits of a method of promotion. The plan as set forth here might not be the best one to follow. But the facts show that some method should be adopted that will not interfere with the progress of the child. The facts also show that we have been "guessing" in matters of promotion.

The fact that more than 50 per cent of those placed in the list of "trials" have made good indicates that we are in need of a new standard. The plan as indicated in this report has had a tendency to put the individual child as the center. The only standard with which a child ought to be judged is whether he is working up to a reasonable limit of his own capacity. A very large percentage of retarded children could be retarded from term to term if a grade standard be maintained. In many cases teachers have said that retarded pupils do poorer work the second term than the first. The fact that it has become an "unwritten" rule that pupils be not retained for more than two terms in any one grade indicates that as a rule these children make little improvement in repeating a grade.

Some teachers have raised the objection that if we are more liberal in our promotions, children will feel that they will be pro-

moted whether they put forth any effort or not. If retardation is simply to serve as a "lash" to whip the children into line, then it is time to search for another motive for work. On the other hand, if children could be made to feel that it is a constant application to duty that is wanted, and that at any time they fail to do the work they are to be retarded, a higher standard would be maintained. Personal comments by many teachers indicate that children do not take advantage of this wholesale advancement. But on the other hand, they feel that they are in the race and must keep up with the others.

Some have said that children may be able to do the work now but will not be able to keep up in one or two years. Such an objection is not very valid. In the first place if our course of study is so constructed that the child may be able to do the work of one grade and fail in some succeeding grade because he was a little slow in a previous grade, it indicates that we should modify the course. In the second place, it would be difficult to say that a weakness in a previous grade is the cause of failure in the advance grade. There are so many changes that may occur in the life of a child in the course of a few years.

It is interesting to note that a large number of pupils who would otherwise have been demoted are doing as good or even a higher grade of work than many who were promoted without question. In a few instances I found that children who would have been retarded were making an average of 80 in all their work, while others, promoted without question, were only making an average of 60.

The individual reports show that no pressure was brought to bear upon the teacher to make her feel that she was under obligation to reduce the number of retarded children. I know that in some cases it was suggested that we should think of both sides. The percentage of retardation had been so materially reduced that probably it had been forced too low. The reduction, as Mr. Mirick stated in the previous report, has come about because of the increase of the number of factors as a basis in making promotions. This increase in the number of factors has been a means of throwing light upon all the children. While special promotions

have been mentioned from three buildings only, the same condition exists at all the other buildings.

The general conclusion that may be drawn from such a study is that education must become a science in fact as well as in theory. If any business concern was as indifferent to the kinds of records kept as the average school, it could not possibly thrive. We work on the assumption that in practice, ignorance is the best policy. There is a feeling even yet among many excellent teachers that they do not care to know much of the past record of the children who come to them. We should know everything about the child. His past record should not in any way prejudice the teacher. Promotions must be based upon a knowledge of what the child has done, and how he has acted, in order that we may judge of what he is capable of doing.

The reports indicate that we have judged wrongly in about 50 per cent of the cases of retarded children. It seems evident, therefore, that a larger number of factors, or wholly different factors, should be considered in our promotion. It is also rather plain that one of these new factors should be a trial in the advanced grade.

The stress is often placed upon the number to be promoted rather than the number to be retarded. If, therefore, instead of moving the whole body of students, the few who cannot do the work were changed, the stress might be put at the proper place. It would be far better to have a few pupils pass along who cannot do the work, rather than err in 50 per cent of those who are retarded.

In order to view this whole subject from another angle I have compiled a few statistics from a large number of tests that were given by the teachers and the supervising principal. These tests were given in the following subjects: history, English, arithmetic, and spelling. The two tables that are given below will show the general results of these tests.

The individual report is similar to a large number of others that were handed in by the teachers. In a number of cases the trials were below the others. The differences in percentage, as shown in the general report, are not large enough to mean much. As there are only a few trials in each grade this would have a tendency to

lower the average. In almost every case a large number of pupils fell below the trial pupils.

The second table shows that there is a difference of only 9 per cent between the two classes. The most significant thing is that a large number, almost 20 per cent, are below the trial pupils. These children were put on "trial" after carefully considering past records and the nature of the new work.

It seems to be evident that what we need to do is to give all pupils a chance and not the few. When the final judgment is passed it must be based upon what the individual is able to get out of the work, and not how he measures up with his neighbor.

INDIANAPOLIS PUBLIC SCHOOLS

SPECIAL REPORT

| | |
|---|---|
| 1. Number pupils tested | 18 |
| 2. Class average | 59 |
| 3. Average of regularly promoted pupils | 58 |
| 4. Average of trial pupils | 64 |
| 5. Number who fell below trial pupils | 8 |
| 6. Grade | 7B |

GENERAL REPORT

| | 2B | 2A | 3B | 3A | 4B | 4A | 5B | 5A | 6B | 6A | 7B | 7A | 8B | 8A | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Number pupils tested | 22 | 26 | 26 | 23 | 37 | .. | 95 | 103 | 69 | 59 | 56 | 58 | 57 | 45 | 676 |
| 2. Class average | 92 | 100 | 86 | 81 | 82 | .. | 69 | 71 | 73 | 65 | 69 | 74 | 71 | 69 | 75 |
| 3. Average of those regularly promoted | 93 | 100 | 85 | 81 | 84 | .. | 65 | 64 | 79 | 65 | 70 | 78 | 73 | 72 | 76 |
| 4. Average of trial pupils | 89 | 100 | 89 | 71 | 76 | .. | 63 | 57 | 61 | 65 | 72 | 59 | 56 | 40 | 67 |
| 5. Number below trial average | 0 | 0 | 8 | 1 | 7 | .. | 16 | 19 | 14 | 20 | 20 | 10 | 9 | 4 | 128 |

# A BRIEF SURVEY OF THE DEVELOPMENT OF COMPULSORY EDUCATION IN THE UNITED STATES

W. A. COOK
Madison, Wisconsin

Just what is the theory upon which rests the right of the state to compel children to take an education? This question has been regarded from very different standpoints at different times and places, and a comparison of current views in our own country, coming from leading educators, would probably afford some interesting material. Very divergent views would doubtless be expressed. The principle has become so generally accepted that it is seldom thought to be necessary to state explicitly the reasons on which the principle rests.

Martin Luther proposed compulsion as a religious duty of the state to its citizens. Everyone should be made to learn to read because he ought to be able to read the Bible for himself. John Calvin also declared for universal education in his ecclesiastical state of Geneva in 1542. John Knox carried the same idea into Scotland. These reformers could hardly have dreamed of the great variation in religious views that would arise from the free reading of the Scriptures. They thought only of the revolt it would spread against Catholicism and not of the differences it would create among the Protestants themselves. With their uncompromising, intolerant attitude it is very likely that these men would have taken a different stand, had they understood the natural results of universal education.

In the sixteenth century French Protestants made a demand for schools in their own country. Holland was liberal in placing educational facilities before all its people, but the principle of action was more the establishment of school than obligatory universal attendance.

Two modern ideas at least may be mentioned, one in the Old World, the other in the New. Compulsory education in England has been regarded as necessary in order to keep the lower classes

from wronging themselves; in America the matter has been considered from the social and political point of view instead of from the personal point of view. Americans consider compulsory education as the *sine qua non* of political existence, since the state cannot, for its own sake permit any of its citizens to grow up in ignorance. This little touch of Spartanism is interesting.

Furthermore, one may urge that compulsory education is the natural complement of a system of free schools. If education is so necessary that schools should be supported by public taxation, it must be so invaluable that everyone needs a certain modicum. If the individual will not voluntarily take the free education offered, he should be compelled to accept it, both for his own sake and for that of society as a whole. After providing a proper equipment, after securing a competent teaching force, after defining the work which the schools shall do in order to justify their existence at public expense, it is imperatively necessary to exact the attendance of the children for a sufficient time to accomplish the object in view. Of course, if any parent prefers to educate his child at home or in a private school, no one can object, if this is not a sham and a pretext and if the education so provided is at least equivalent to that which the public requires.

Compulsory legislation began very early in this country, almost as early as the schools themselves. In Massachusetts a law was enacted in 1642 making the education of children and indentured servants necessary, so far as a knowledge of the reading of English and a knowledge of criminal law were concerned. Further legislation was passed from time to time in the same colony and was generally enforced.

It was not until the factory system arose, however, and the flood of illiterate immigration set in that a serious situation arose. The effect of the factory system was to make larger demands on the time and energy of the workingman and to curtail his opportunity to devote himself to preparation for intelligent living. The tendency of immigration was to create a large class without the educational traditions or the helpful home influences of the native New Englander. The laws passed in England about the opening of the nineteenth century were substantially copied in Connecticut and Massachusetts. The responsibility was placed principally upon

the employer, less upon the parent. As compulsory legislation the enactments were altogether defective according to present standards, the age limit was low, the prescribed annual term of school attendance was short, and there was no legal machinery competent to enforce penalties, though the penalties written in the statutes sounded somewhat severe.

When the great movement for free public schools began spreading over the country near the middle of the last century, the idea of compulsion followed as a corollary. The Massachusetts law of 1852 was the first to be passed in the new era. Its provisions mark it as a piece of modern legislation in every respect except that of enforcement. Years of experience had demonstrated that special officers are needed for this purpose. This defect in the Massachusetts law has been corrected in later legislation. Later experience has, however, carried us farther. It is becoming evident that an officer of the larger political unit is the best, in order that all idea of local color, or favoritism due to acquaintance or relationship may be eliminated. Officers who are subject to what we term political influences are a failure at this task.

The gradual corrections of the defects in the Massachusetts law have been made with scarcely a backward step. Few states have made so many mistakes or progressed so consistently. The other commonwealths took action later and so were able to avoid some of the blunders of the pioneer in compulsory legislation. New Hampshire, Connecticut, Vermont, and New York all acted from 1867 to 1874. The Connecticut law was from the beginning a practical working measure, though it has repeatedly been amended in important particulars.

In the decade 1880–90 many of the American commonwealths attacked the problem in earnest. Three distinct issues arose in this connection aside from the main point of the law: (1) the restriction of employment of children of school age,[1] (2) provision for very poor children, (3) the supervision of the non-public school. By 1890 laws existed in about thirty of the states. The general age limit was eight to fourteen; six to sixteen was the extreme range and did not occur in any one state. The annual term required

[1] The limitations of this article make it necessary to omit any discussion of factory legislation.

varied from 12 to 20 weeks, except in Massachusetts where 30 was the maximum. Several states provided for the children of needy parents by furnishing free textbooks. Three states excused such from the operation of the law, and two assisted by providing clothing. The penalties were for the most part left to the discretion of courts having jurisdiction. The inferior and superior limits of fines were usually $5 and $20 respectively, but Illinois and New York established a minimum of $1. Labor of those under fourteen was rarely permitted. The attitude toward private and parochial schools was defined in about half of the laws, by prescribing certain branches, but no method of determining conformity to the requirements was specified.

If one were to have traveled overland from Philadelphia to the headwaters of the Ohio, followed that stream to its confluence with the Mississippi, and thence traveled southwest, he would approximately have cut the states having compulsory legislation from those without it.[1] The significance of this general geographical distribution of compulsory statutes is interesting and depends upon a whole group of political, social, and economic factors.

The following is a general summary of the condition in 1910, twenty years later than the time just described. The two decades between 1890 and the present show marked advancement in various ways. Every state now has some sort of a factory law with reference to child labor, but Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas have no law for compulsory education. The extreme age limits affected in any part of the country are seven and eighteen. Idaho and New Jersey stand at the top with ranges of eight to eighteen and seven to seventeen, respectively. The average would seem to be seven to fourteen or seven to fifteen.

Another change appears in the tendency to require attendance for the full term instead of for a limited number of weeks, but in most of the states where the laws are of recent passage 12 or 16 weeks is a common requirement. In states where any discrimination is made between localities, the distinction is made (1) by per-

[1] To be more exact, Missouri, Iowa, Indiana, and Pennsylvania had not yet acted. Those interested in following the movement in detail should consult the Reports of the U.S. Commissioner of Education.

mitting local boards to reduce the annual term of compulsion, and (2) by setting a higher standard in the cities. In general, it is fair to say that the annual period of compulsory attendance varies in length with the annual school term.

Disregard of the law is now a more serious offense than formerly. Many states permit a fine of as high as $50. There is a freer use of imprisonment than a few years ago, especially in default of payment of fines; but some states provide for imprisonment irrespective of the assessment of a fine. Cumulative penalties for repeated offenses are meted out in many states. The penalties in the South, as might be expected, are low.

With private schools there has been much friction in places. The desire of the authorities to maintain a proper standard of instruction in all schools which shall under the law be deemed a substitute for the public school, has caused the management of these private or church enterprises to resent what they considered an infringement of their rights. The cry of religious freedom when raised at this point has at times found listeners. In any case there obviously should be some method of passing on the work of such schools. The authorities, the city, the county, or the state, should inspect the work of all such schools just as the work of public schools is inspected. A superintendent is not willing to judge the work of a teacher as to its passable character by the course of study which that teacher is supposed to teach; and it is safe to assert that no school can be judged rightly by its announcements merely.

A new principle, and an eminently proper one, is coming slowly into operation in enactments dealing with compulsory education. The mental attainments of the child are being recognized as a proper basis upon which to determine whether attendance has been adequate. For instance, the ability or lack of ability to read and write is coming to be recognized as more important than the pupil's age. Most states are still adhering to the old plan of the age limit, but it seems likely that age will be combined with tests of educational efficiency in such a way as to secure a new adjustment. For after all, the theory underlying compulsory education is that there is need of a certain amount of education, and not that one should spend a certain length of time with a book in one's hand.

# A THREE-YEAR RETARDATION RECORD

FREEMAN E. LURTON
Superintendent of Schools, Anoka, Minn.

To all who are charged with the administration of school affairs it has long been evident that there are large numbers of children who are behind the schedule set for them, or are "retarded." This is true by whatever method you elect to determine the number or whatever you may believe the causes to be. The undeniable fact is that serious numbers are retarded.

We believe that the amount of retardation is capable of being reduced. Were it otherwise we should face a vast amount of hopeless waste in educating the children.

Probably the most effective way, in the long run, to deal with this question would be wholly to recast the course of study, eliminating that which is irrelevant or non-essential, and adjusting the rest to the actual life-conditions surrounding the children. But that is a work too vast for one man to undertake. The present course of study is the result of the best educational experience of the past. Wide experience and vast educational wisdom would be necessary to attempt a sweeping and constructive revision. Until the man of vision arrives we had better work humbly at the problem of bettering present conditions.

Below, we give a table showing the percentage of retarded pupils, grade by grade, for three years, in the Anoka schools.

| | Totals | | | Grades | | | | | | | | Reduction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Enrolled | Retarded | Percentage | I | II | III | IV | V | VI | VII | VIII | |
| 1908–9... | 581 | 407 | 70.0 | 37.8 | 59.4 | 57.5 | 70.8 | 82.2 | 85.7 | 75.3 | 92.2 | ... |
| 1909–10.. | 552 | 363 | 65.7 | 37.3 | 53.8 | 62.2 | 68.7 | 73.3 | 87.5 | 80.3 | 77.5 | 4.3 |
| 1910–11.. | 510 | 317 | 62.1 | 42.1 | 43.5 | 61.9 | 65.5 | 68.0 | 71.2 | 76.8 | 73.4 | 3.6 |

The reduction shown in the above table is due to no changes in the course of study. In fact, during the time covered by the report, music was introduced into all the grades and manual training, for the boys, into the seventh and eighth grades. Before 1909–10

pupils were promoted if they had only one major study (arithmetic, geography, history, or grammar) below the required passing mark. Beginning with that year they have been obliged to have *all* studies up to grade to win promotion. So the amount of work required is greater and the standard of passing more severe in the years being discussed.

A friend of mine, eminent in political science, frequently asserts that the moment you convince people that a reform is needed, that moment you have virtually effected it; the rest is merely detail to be worked out. That dictum seems true in this case.

The year 1908–9 shows the high total of 70 per cent of the pupils as being retarded. The average for the state of Minnesota, as determined in an extensive investigation, was 58.9 per cent in 1910. So at the beginning of the year 1909–10 the attention of the teachers was called to the conditions and their sympathy and interest enlisted in an effort to reduce the amount of retardation existing. The data presented here shows that a reduction of 4.3 per cent was effected that first year. In the next year a further reduction of 3.6 per cent was brought about. In the following grades the reduction has been continuous: II, IV, V, VIII; in the others it was variable. But, as said before, this reduction of 7.9 per cent in the number of retarded pupils was not due to any radical changes and certainly to no application of soft pedagogy. The reverse. The attention of the teachers was simply directed to the possible relation between retardation and irregular attendance, tardiness, technicalities in examinations, carelessness in coaching the slower pupils, the marking of examinations, care in assigning lessons, the making-up of lost work, and similar matters that lessen a pupil's grasp upon his work or lower his grades. The exercise of greater care and sympathy, and, in general, a greater concern for the individual, rather than so much concern for the "room," has produced some valuable results in more ways than indicated by the table, for such things cannot be reduced to figures.

The gist of the matter is this, we paid just such attention to the elements of loss and waste that would be paid in a careful business enterprise. To reduce to the minimum the loss in so precious a material as the teacher has to deal with would seem to be worth the best efforts of all whose aim is constructive teaching.

# EDITORIAL NOTES

**A Study of Economy**

A committee of the National Education Association is considering the general problem of economy of time in elementary education. In the February number of this Journal Dr. Bobbitt gave an account of the efforts which are being made under Superintendent Wirt, of Gary, to economize the time and energy of pupils through a form of school organization which keeps the schools in operation for a longer period each day, and presents the possibilities of many different types of activity. Other students of education have presented with equal emphasis the importance of economizing the time and energy of students through better methods of instruction. It is often suggested that the course of study be modified by the elimination of the unnecessary topics in arithmetic, grammar, and geography, so that only the essentials may be taught. All of these suggestions in the direction of more intensive work on the part of pupils are met by skepticism on the part of some who question whether the forcing process which such intensive methods are supposed to encourage will not be more injurious to the children than the present waste. Some parents urge that children get outside of school quite as much as they get in school, and it is asserted furthermore that the conditions of life are more favorable outside of school. This view is frequently expressed in the statement that children should not be compelled to work too hard, because hard work will injure the child's health. Again, skepticism with regard to the wisdom of plans of economy expresses itself in the question whether children are not losing something of the general culture that came from the slower and less systematic forms of study that prevailed in the older course of study which was not so rigidly administered with a view to economy of time.

**First, Experience Should Be Recorded**

Certainly there is a problem presented by these various opposing views which it is the business of teachers and superintendents to examine in the light of the broadest possible experience. The committee of the National Education Association ought to have the benefit of the experience of anyone who has succeeded in economizing the time of the elementary school, whatever the direction of the economy

achieved. Superintendent H. B. Wilson, of Decatur, Ill., is chairman of the committee and will welcome information from any quarter which will be of assistance to the committee in its work. No contribution should be regarded as trivial if it has been shown in actual school experience to be effective. The teacher who has an economical method of instruction, the principal who has organized a course of study which covers the essentials, and the superintendent who is interested in broader forms of organization, should all be prepared to contribute to the report of the committee by letting their plans be known and by inviting a careful scrutiny of the results brought about through these plans.

After information has been secured regarding the efforts which are being made to economize time and energy, there still remains a need which the committee ought to be able to meet. This is the need of securing better methods than are now at hand for testing results. There can be no doubt that many plans which are supposed to effect great economy do not succeed in the long run. Children can be induced through special effort to show phenomenal results in certain narrow lines of activity. But it is found impossible to follow up these precocious attainments with anything like a general exhibition of real intellectual maturity. For example, children can learn through the use of blocks and figures to manipulate fractional relations with great facility. When it comes to a mastery of the other forms of number relation, they show no greater ability than pupils who have been taught by other methods. While there should be therefore the largest hospitality for any devices that are suggested in the direction of economy there will never be a solution of the problem of economy until the remoter results of each type of training can be tested and balanced against the results of current practices. The development of methods for testing results goes on very slowly, because new educational methods are usually the results of the enthusiasm of a small group of individuals. No individual can look upon his own efforts in an impartial way. The committee of the National Education Association has, therefore, an excellent opportunity to make a unique contribution to the discussion of this topic, if, in addition to a statement of the various efforts which

**Second, Results Should Be Tested**

are now being made, it can contribute some definite evaluations of these efforts.

**The Resources of the National Education Association Should Be Used**

No greater service could be performed by the National Education Association than to contribute to the support of a general investigation of this type. The Association is in danger during this period, when it devotes itself primarily to the holding of great meetings, of losing the prestige which was gained by its earlier contributions to education. Committee work within the Association has in recent years hardly risen to the level of the great achievements of the earlier committees, which were in possession of the necessary funds to carry on in a large way the complete investigation of the problems committed to them. While the Association spends its time discussing certain petty issues of internal politics, the investigation of large educational problems is taken up here and there by individuals or by institutions of much narrower range of influence than the National Education Association. A permanent fund large enough to give support to many educational investigations is locked up for some mysterious reason and held as an emergency fund for some remote and indefinite future. One can hardly help suggesting that this is in itself a very bad exhibition of economy that savors more of parsimony than of wisdom. Committees ought to have freedom to use the energies of the Association in the investigation of this and other similar large problems.

**The Attitude of Educators Should Be Expressed**

The answer to the question why these committees are not permitted to go forward in a large way is to be found in the apathy of the members of the National Education Association. If they express themselves with vigor, the policy of that Association would of necessity be changed. The petty politics of which we have heard so much during recent years would be eliminated, and the Association would again become a force in American education. If some such change as this does not take place very shortly, it is altogether probable that other agencies will arise to carry forward educational investigation. The problems are too urgent to be neglected. The agencies for the solution of these problems can be organized without the support of the National Education Association, if that Association fails to recognize the importance of these problems.

# BOOK REVIEWS

*A Brief Course in the Teaching Process.* By GEORGE DRAYTON STRAYER, PH.D. New York: Macmillan, 1911. Pp. xiv+315. $00.

Professor Strayer's book is a concrete, practical discussion of the general principles of method with a wealth of illustrative material drawn from the work of elementary schools. It is the culmination of several years of instruction as a member of the Department of Elementary Education at Teachers College, Columbia University. This fact explains the almost complete omission of discussions of the problems of teaching in high schools. The general organization of the book will be familiar to Professor Strayer's former students and to others who are acquainted with Teachers College syllabi, since it is largely a discussion of the points outlined in the same author's *Syllabus of a Course on the Theory and Practice of Teaching in Elementary Schools* (1909).

The book is intermediate in character between McMurry's *Method of the Recitation* on the one hand and Bagley's *Educative Process* on the other. It is like McMurry's book in the direct practical bearing of most of the points made, in the wealth of concrete illustrations from actual elementary-school practice, and in the ease with which most of it may be understood. The field covered, however, is much broader. It is like Bagley's book in its range of topics, but is unlike the books of Bagley and Colvin in the small number of specific references which it contains to the results of educational and experimental psychology. Perhaps the book that it resembles most is Charters' *Methods of Teaching*.

Seven chapters out of the total of nineteen are devoted to a discussion of different types of lessons, namely, drill, inductive, deductive, appreciation, study, review or examination, and the recitation lesson. The other chapters deal with the aim of education, the factors conditioning the teaching process (largely a discussion of instinct and interest), the teaching process (primarily a discussion of the Titchener-Bagley types of attention), questioning, the social phases of the recitation, the physical welfare of the children, moral training, class management, lesson plans, the teacher in relation to supervision, the teacher in relation to the course of study, and measuring results in education. About two-thirds of the book consists of the author's own text and about one-third of quoted material. The latter includes an appendix of 43 pages, consisting of syllabi on the teaching of English, arithmetic, geography, and history by the heads of the corresponding departments at Teachers College. Forty-eight pages are devoted to sample lesson plans and seventeen pages are quoted from Stone's study of *Arithmetical Abilities*. At the end of each chapter is a list of exercises which involve application by the student of principles learned in the chapter.

The author's point of view is eclectic. The selection and organization of the main points show evidence of the influence of Bagley, Thorndike, McMurry, and Dewey. Of these, perhaps the influence of Dewey is greatest, as shown in the reiteration of the necessity of organizing school work on the basis of a co-operative social situation in which the teaching processes start with the conscious needs of the children.

To those readers who approach the consideration of methods of teaching primarily from the standpoint of educational and experimental psychology, Professor Strayer's book is slightly disappointing. From this point of view it would seem that more definite and frequent references to such material as Professor Colvin summarizes

would give the book a more satisfactory and probably more valid scientific character. As it is, one feels that the book might have been written on the basis of an elementary knowledge of such a text as James's *Briefer Course* or Titchener's *Primer*.

On the other hand, it is interesting to note that while much of the material is of the same elementary character as McMurry's *Method of the Recitation*, the content and form of Professor Strayer's book were developed to suit the needs of mature, experienced teachers who were doing senior college or pseudo-graduate work. If the book is really on the plane of such persons, some of our method books which are interpreting teaching in terms of advanced educational psychology are shooting far over the heads of the students for whom they are intended.

S. CHESTER PARKER

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*Songs of a Little Child's Day.* Words by EMILIE POULSSON; music by ELEANOR SMITH. Springfield, Mass.: Milton Bradley Co.

This book is a distinct addition to the simple musical material for the home, the kindergarten, and the first grades of the elementary school, and must be counted as one of the best six books of songs for young children. Here is a collection which realizes the demand which has theoretically been accepted for some time, that songs for little children should be simple in idea, short in expression, attractive in melody and rhythm, and easily learned. The composers have put their ripest products into this volume, and the home and the school are richer for it.

P. W. DYKEMA

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*Colonial Carols; Dutch Ditties; A Chinese Child's Day.* Three books of children's songs. By ANICE TERHUNE. New York: G. Schirmer. $1.25 each.

It is but faint praise to say that this collection is above the ordinary of those not especially compiled for school use. They are still too much like the usual combination of careful printing, adequate binding, and pretty illustrating bestowed upon mediocre literary and musical material. Some of Mrs. Terhune's words, however, are of real worth. The music, though too often approaching close to a cheap, popular style, and now and then becoming frankly this, forms in a few instances a real contribution to the list of children's songs. It is unfortunate that the composer has, through a serious ignorance or a wilful disregard of the lower limits of the child's voice, for which these songs are obviously intended, made the already small proportion of good songs even smaller. Most of the compositions run below the staff, several down to B, and a few down to G. In each of the three volumes are some bits characteristic of the types discussed. While the books are not to be recommended for general school use, when music descriptive of the children of China, Holland, and our own early colonies is desired these volumes may be resorted to for interesting suggestions.

P. W. DYKEMA

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*Child Life in Song and Speech; Tone Plays for Children.* By ALICE E. BENTLEY. New York: A. S. Barnes & Co.

These two pamphlets of twenty-four and of twenty-eight pages by the supervisor of music in Washington, D.C., should be in the hands of every teacher or parent of young children. They furnish an inspiring guide to a point of view regarding song

which will do much to increase the meaning of music, in fact of all tone, in the life of the child, and will do much for music in the home, and for making music a natural means of expression.

P. W. DYKEMA

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*Swedish Folk Dances.* By NILES W. BERGQUIST. New York: Barnes & Co. $1.50.

This second edition is a decided improvement on the first edition. The introduction by Mr. Crampton gives a brief outline of the causes leading to the present value placed on folk-dancing by educators interested in city problems, and is well worth reading.

The dances are clearly described and the information accurate. The collection is of value to playground teachers or those interested in social centers. There is one disappointment—the pictures are of Americans in America executing Swedish dances in imitation Swedish costumes. One likes the characteristics of a country preserved in as perfect a form as possible when recommending folkwork of any kind to teachers.

Surely the genuine spirit of Swedish dances can best be portrayed by Swedish people in their own country, dressed in national costume. The memory or picture of a Swedish youth on the wharf at Laksend on midsummer's eve, with his long blue coat tails swinging out behind, his white student cap pushed back on his blonde head—dancing as our men cannot, with a lightness and swing and an entire absorption in the joy of the rhythm—is surely worth more as an inspiration or model than any number of imitations given by Americans.

MARY WOOD HINMAN

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*Morris Dance Tunes.* By JOSEPHINE BROWER. New York: H. W. Gray & Co.
*The Morris Dance.* By JOSEPHINE BROWER. New York: H. W. Gray & Co.

It is a help to all teachers of folkwork to have music and notes condensed, and this has been successfully accomplished by Miss Brower in her two books, *Morris Dance Tunes* and *The Morris Dance.* The dances described are appropriate for playgrounds, social centers, and public schools.

Those who do not possess the English books on morris-dances will find Miss Brower's book valuable. The steps are clearly and accurately described and the music is unabridged. Miss Brower 's introduction to *Morris Dance Tunes* gives a short history of the resurrection of the old morris-dances.

Every book of this kind helps restore to us "our long-lost birthright to recreation which is not manufactured."

MARY WOOD HINMAN

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*A Leaf Key to the Genera of the Common Wild and Cultivated Deciduous Trees of New Jersey.* By MARY F. BARRETT, State Normal School, Upper Montclair, New Jersey. 1911. Pp. 7.

This pamphlet, is designed to use leaf, bark, trunk, and twig characteristics as means of identification. Flowers and fruit are not used, and leaves constitute so nearly all of the features that are called for that it would not be possible to use the key except when leaves are available. Furthermore, the key is so meager that it

would seem impossible for general students to use it with any success unless they are constantly assisted by a teacher who has abundant information upon the many points that are omitted. Such a brief key often proves very helpful in the laboratory of the person who devises it, since the teacher may supplement as fully as is necessary, but for accurate identification of plants of any group in any general and independent way, more explicit and comprehensive descriptions are necessary.

O. W. C.

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*When Should a Child Begin School?* By W. H. WINCH. Baltimore: Warwick and York, 1911. Pp. 96.

The question put in the title is investigated by comparing the advancement in school of pupils who have entered at different ages. In England, where the study was made, the child may enter school at the age of three and is required by law to enter at the age of five—though some children enter after five because they receive instruction at home or because of neglect. The early years are spent in an infant department. A child is advanced to the grades (or "standards") when he reaches the proper age irrespective of the length of time he has spent in the infant department. The amount of advancement or retardation of a particular child was measured by the number of months by which he was younger or older than the standard for his grade. With this form of measurement it was found that of the children who entered before five years of age there was no difference in the advancement of those who entered early as compared with those who entered later. Those who entered after five were possibly somewhat retarded in comparison with those who entered before five. No difference was found also in the standing in examinations or the deportment or attentiveness of those who entered early or late.

Since this result seemed somewhat surprising (and to the infant-department teachers, discouraging) the author inquired whether it might be due to the fact that children from "poor" homes entered early, in the main, and thus brought down the average of the group of those who entered early. This supposition was not found to be true. We are left with the conclusion, therefore, that entrance before five does not give the child an advantage in his subsequent school career. The investigation seems to have been carefully made and the results justify the author in his conclusion. It is still possible, however, that there is a type of training, different from that given in the infant departments, which would be of advantage to the child in his later school career.

FRANK N. FREEMAN

# BOOKS RECEIVED

## AMERICAN BOOK CO., CHICAGO

*Practical Algebra, Second Course.* By JOSEPH V. COLLINS. Cloth. Pp. 303. Price $0.85.

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BIRDSEYE, The college curriculum as a preparation for vocation. 293–309.

[1] *Abbreviations.*—Atlan., Atlantic Monthly; Cent., Century Magazine; Cur. Lit., Current Literature; Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; Harp. W., Harper's Weekly; J. of Educa. Psychol., Journal of Educational Psychology; Lit. D., Literary Digest; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinic, Psychological Clinic; R. of Rs., Review of Reviews; School R., School Review; Sci. Am. Sup., Scientific American Supplement; Scrib. M., Scribner's Magazine; Teach. Coll. Rec., Teacher's College Record.

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